



Australian Government

MEM07011 Perform complex milling operations

Release: 2

MEM07011 Perform complex milling operations

Modification History

Release 2. Quantum of hours of workplace practice removed. Supersedes and is equivalent to MEM07011 Perform complex milling operations (Release 1).

Release 1. Supersedes and is equivalent to MEM07011B Perform complex milling operations.

Application

This unit of competency defines the skills and knowledge required to perform complex milling operations on a range of materials, including non-standard metals and alloys.

It applies to a range of complex milling operations, including jobs requiring high precision or quality and operations requiring complex calculations.

Where the selection and use of power tools/hand held operations is required unit MEM18002 Use power tools/hand held operations should also be selected.

No licensing, legislative or certification requirements apply to this unit at the time of publication.

Band: A

Unit Weight: 4

Pre-requisite Unit

MEM07005	Perform general machining
MEM07007	Perform milling operations
MEM09002	Interpret technical drawing
MEM11011	Undertake manual handling
MEM12003	Perform precision mechanical measurement
MEM12023	Perform engineering measurements
MEM12024	Perform computations
MEM13015	Work safely and effectively in manufacturing and engineering
MEM14006	Plan work activities
MEM16006	Organise and communicate information
MEM18001	Use hand tools

Competency Field

Machine and process operations

Elements and Performance Criteria

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

1	Determine job requirements	1.1	Follow standard operating procedures (SOPs)
		1.2	Comply with work health and safety (WHS) requirements at all times
		1.3	Use appropriate personal protective equipment (PPE) in accordance with SOPs
		1.4	Identify job requirements from specifications, drawings, job sheets or work instructions
2	Select milling cutters	2.1	Select correct milling cutter/s for required operation
		2.2	Select correct cutter inserts using International Standard Organisation (ISO) standards as required, and mount in cutter blank
		2.3	Mount cutter to machine spindle and check for concentricity
3	Set up work	3.1	Determine the cutting parameters and steps required to mill components
		3.2	Set up machine with appropriate accessories for milling operations, as required
		3.3	Set up work to required level of accuracy
4	Perform complex milling	4.1	Perform calculations as necessary to achieve specifications for component to be milled
		4.2	Check components for compliance with specifications

Elements describe the essential outcomes.

Performance criteria describe the performance needed to demonstrate achievement of the element.

4.3 Rectify non-compliant product in accordance with SOPs

Foundation Skills

This section describes those required skills (reading, writing, oral communication and numeracy) that are essential to workplace performance in this unit of competency.

Foundation skills essential to performance are explicit in the performance criteria of this unit of competency.

Range of Conditions

This field allows for different work environments and conditions that may affect performance. Essential operating conditions that may be present (depending on the work situation, accessibility of the item, and local industry and regional contexts) are included.

Complex milling operations include one (1) or more of the following:

- cutting of one or more of the following:
 - spur gears
 - racks
 - helical gears
 - radial uniform rise cam lobes

Milling cutter/cutters include one (1) or more of the following:

- ganged cutters
- form cutters

Set up includes the following:

- verifying using instruments, including dial test indicators and sine bars

Appropriate accessories include the following:

- omniversal tables
- differential dividing heads

Unit Mapping Information

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Links

Companion Volume implementation guides are found in VETNet -

<https://vetnet.gov.au/Pages/TrainingDocs.aspx?q=b7050d37-5fd0-4740-8f7d-3b7a49c10bb2>

Assessment Requirements for MEM07011 Perform complex milling operations

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Performance Evidence

Evidence required to demonstrate competence in this unit must be relevant to and satisfy the requirements of the elements and performance criteria on at least two (2) occasions and include:

- following work instructions, standard operating procedures and safe work practices
- identifying and interpreting specifications, charts, lists, drawings and other applicable reference documents to carry out complex milling operations
- selecting appropriate cutter inserts for cutting operations according to specifications and ISO standards
- calculating cutting parameters, including speeds, feeds and ratios
- setting up gear trains according to calculations and standard operating procedures
- perform complex milling using dividing heads and omniversal tables to specifications
- checking components for conformance to specifications using precision measuring instruments
- rectifying non-compliant product.

Knowledge Evidence

Evidence required to demonstrate the required knowledge for this unit must be relevant to and satisfy the requirements of the elements and performance criteria and include knowledge of:

- safe work practices and procedures and use of personal protective equipment (PPE)
- precision measuring equipment and their applications
- procedures for accurately setting up work
- ISO standards applicable to milling cutter inserts
- procedures for milling components, such as racks and gears
- calculations, geometry and formulae relating to complex milling activities
- accessories used for complex milling
- applications and use of omniversal tables and differential dividing heads to complex milling operations
- tools, techniques and equipment for checking components for conformance to specifications and rectifying non-compliant components.

Assessment Conditions

- Assessors must:
 - have vocational competency in performing complex milling operations at least to the level being assessed with relevant industry knowledge and experience
 - satisfy the assessor requirements in the *Standards for Registered Training Organisations 2015* or its replacement and comply with the *National Vocational Education and Training Regulator Act 2011*, its replacement or equivalent legislation covering VET regulation in a non-referring state/territory as the case requires.
- Assessment must occur in a functioning workplace. Where assessment in the workplace would be unsafe, impractical or threatens the environment, assessment must occur in a sufficiently rigorous simulated environment that reflects the circumstances that would be experienced in a functioning workplace. Assessment must cover all aspects of workplace performance, including task skills, task management skills, contingency management skills and job role environment skills.
- Conditions for assessment must include access to all tools, equipment, materials and documentation required, including relevant workplace procedures, product and manufacturing specifications.
- Assessment processes and techniques must be appropriate to the language, literacy and numeracy requirements of the work being performed and the needs of the candidate.

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